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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,881	08/31/2001	Ping Li	021238-478	9479

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EXAMINER	
WALLS, DIONNE A	
ART UNIT	PAPER NUMBER
1731	6

DATE MAILED: 11/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/942,881	LI ET AL.
	Examiner	Art Unit
	Dionne A. Walls	1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-42 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-42 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 31 August 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 10 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 10 and 11 recite the limitation "step (i)" in line 1 of both claims. There is insufficient antecedent basis for this limitation in the claim.

Claim Objections

4. The claims have been misnumbered starting at claim number 32, because Applicant has listed this claim twice. Therefore, in accordance with 37 CFR 1.126, the misnumbered claims have been renumbered. The second listing of claim 32 is now claim 33. Since the preliminary amendment added four new claims, the total number of claims is now 42. It is requested that all future communications be worded in accordance with the new claim numbering. ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-22, 25-30, 33-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heim et al (US. Pat. No. 4,193,412) in view of Deevi et al (US. Pat. No. 5,443,560).

Heim et al discloses tobacco products (and a method of making same), which include commercial cigarettes (which conventionally have a wrapper – satisfying claim 25), wherein the natural tobacco used as smoking material (corresponding to the claimed "cut filler") contains a metal oxide additive which can comprise titanium dioxide or aluminum oxide, in a variety of forms, i.e. amorphous (satisfying claims 39 and 41). These metal oxides are provided such that they exhibit average particle sizes ranging form 20-30 nanometers (corresponding to the claimed "nanoparticles/average particles size of less than 500/100/50 nm"); aluminum oxide, in particular, exhibits a surface area of between 103-215 m squared/g (corresponding to the claimed surface area ranges) (see entire document). While Heim et al may not specifically disclose that the purpose of the metal oxides is to serve as an oxidant for the conversion of carbon monoxide to carbon dioxide ad/or as a catalyst for the conversion of carbon monoxide to carbon dioxide, Heim et al does disclose that the metal oxide additives are utilized in the invention for their superior ability to remove toxic substances form tobacco smoke (col. 2, lines 39-41). Further, Deevi et al states that during cigarette smoking, metal oxides act as oxidation catalysts to promote the conversion of carbon monoxide to carbon dioxide (col. 4, lines 19-21). This suggests that metal oxides serve to both oxidize carbon monoxide and catalyze the oxidation process. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize the

metal oxides disclosed in Heim et al for this purpose (corresponding to the claimed "capable of acting as both an oxidant.....and as a catalyst").

Regarding claims 5, 16, 35, 40 and 42, while Heim et al modified by Deevi et al may not disclose that the additive is iron oxide, Heim does state that various types of metal oxides may be used as an additive of its invention. Further, Deevi et al indicates that iron oxide, having submicron particle size (corresponding to the claimed "nanoparticles"), is a preferable metal species to effectuate/promote the conversion of carbon monoxide to carbon dioxide. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize iron oxide as an additive to the tobacco material of Heim et al modified by Deevi et al since it is a metal oxide known for promoting the formation of carbon dioxide from carbon monoxide, and for reducing toxic substances in cigarette smoke. While Heim et al modified by Deevi et al may not specifically state that the iron oxide would be added in an amount effective to convert at least 50% of the carbon monoxide to carbon dioxide, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a sufficient amount of the ferric oxide to achieve this goal, since the purpose of adding the metal oxide is to remove/convert as much of the harmful gas as possible. One having ordinary skill in the art would be motivated to optimize the amount of additive in order to achieve the greatest amount of carbon monoxide removal (i.e. carbon dioxide generation) as possible.

Regarding claims 9, 20 and 30, while Heim et al modified by Deevi et al may not specifically disclose that the additive has an average particle size of less than about 5

nm, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide the metal oxide additive a small a particle size as possible, since the effectiveness of the additive, and the crux of the invention, lies, in part, in the fact that the additive has a large surface area (see col. 2, lines 42-55), and its widely known in many arts that the smaller the particle size of the substance, the larger its surface area.Claims 23-24 and 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heim et al (US. Pat. No. 4,193,412) in view of Deevi et al (US. Pat. No. 5,443,560) and further in view of Fischer et al (US. Pat. No. 4,574,821).

While Heim et al modified by Deevi et al may not disclose a cigarette that comprises 5-100 mg or 40-50 mg of additive, Heim does disclose that the additive can constitute 10% by weight of the tobacco filler (see table 2). Additionally, Fischer discloses that cigarettes can be manufactured which contain form 200 – 1000 mg of tobacco filler. Therefore, a cigarette having 20-100 mg of additive is contemplated if one having ordinary skill in the art utilized the cigarette disclosed in Fischer. It would have been obvious to one having ordinary skill in the art at the time of the invention to fabricate a cigarette having, for example, 450 mg of tobacco which would result in a cigarette containing 45 mg of additive (hence, satisfying the claims), since construction of cigarettes having this amount of tobacco is known as evidenced by the Fischer disclosure.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dionne A. Walls whose telephone number is (703) 305-0933. The examiner can normally be reached on Mon-Fri, 7AM - 4:30PM (Every other Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven P Griffin can be reached on (703) 308-1164. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

Dionne A. Walls
October 31, 2002